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Signed

Dated

R. Mahoney  
26 November 2003

Patents Form 1/77

(Patents Act 1977  
(Rule 16)

16APR03 E800799-1/00977

P01/7700 0.00-0308808.5

**Request for grant of a patent**

*(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form.)*

THE PATENT OFFICE  
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The Patent Office  
Cardiff Road  
Newport  
South Wales  
NP10 8QQ

1. Your reference

PO 3938GB

2. Patent application number

(The Patent Office will fill in this part)

0308808.5

3. Full name, address and postcode of the or of each applicant (*underline all surnames*)

CFS489528003

E. T. ENVIRONMENTAL LIMITED  
47 Central Avenue  
West Molesey  
Surrey KT5 1QE  
GB

Patents ADP number (*If you know it*)

If the applicant is a corporate body, give the country/state of its incorporation

GB

4. Title of the invention

**METHOD AND APPARATUS FOR  
DESTROYING HAZARDOUS MATERIAL**

5. Name of your agent (*If you have one*)

LAURENCE SHAW & ASSOCIATES  
10th Floor, Metropolitan House  
1 Hagley Road  
Edgbaston  
Birmingham B16 8TG  
GB

Patents ADP number (*If you know it*)

13623001

00013623002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (*If you know it*) the or each application number

Country	Priority application number ( <i>If you know it</i> )	Date of filing ( <i>day / month / year</i> )
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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing ( <i>day / month / year</i> )
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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (*Answer Yes or:*)  
 a) *any applicant named in part 3 is not an inventor, or*  
 b) *there is an inventor who is not named as an applicant, or*  
 c) *any named applicant is a corporate body.*  
*See note (d).*

YES

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## Patents Form 1/77

- ✓ Enter the number of sheets for any of the following items you are filing with this form.  
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Continuation sheets of this form.

Description

4

Claim(s)

2

Abstract

*D*

Drawing(s)

1 *ONLY*

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 2/77)

Request for substantive examination  
(Patents Form 10/77)Any other documents  
(Please specify)

11.

✓ We request the grant of a patent on the basis of this application.

Signature

Date 16.04.2003

LAURENCE SHAW &amp; ASSOCIATES

12. Name and daytime telephone number of person to contact in the United Kingdom

L Shaw

0121 454 4962

## Warning

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## Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
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Agent's Ref: P03938GB

METHOD AND APPARATUS FOR  
DESTROYING HAZARDOUS MATERIAL

The invention relates to the detection of hazardous material deliberately sent through the post or otherwise delivered by somebody with an evil intent. An example might be the application of a coating of an anthrax micro-organism to the external surface of a package or the inclusion of a toxic powder within it. It is known to try to isolate a hazardous material from a package but so far as we are aware no attempt is made to isolate hazardous material and destroy it.

It is an object of this invention to satisfy that need in a particularly efficient way.

In one aspect the invention provides a method of treating a package to release hazardous material which is associated with the package, the method comprising introducing pressurised air which is free of dust particles and micro-organisms into a zone of a chamber containing the package to be treated, contacting the air with the package, and releasing hazardous material therefrom.

Preferably the air which has passed over the package is then passed over an ultraviolet light source to treat particles of hazardous material released into the pressurised air.

The method most preferably includes the step of locating in a lower region of the zone an ultraviolet source and allowing or causing particles of the released hazardous material to fall thereon.

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Preferably a negative pressure is maintained within the chamber.

The pressurised air is passed through the chamber at a suitable rate.

Preferably, a table is present in the zone to receive the package, the table being perforated so that the pressurised air can pass therethrough.

Preferably gloves are present in the zone and accessible from the outside by which an operator may manipulate a package on the perforated table to cause or allow release of hazardous material.

In another aspect the Invention provides apparatus for treating a package to release and destroy hazardous material which is associated with the package, the apparatus comprising a chamber having a zone containing the package to be treated, means for supplying air which is pressurised and free of dust particles and micro-organisms to the zone to contact that air with a package in the zone, and an ultraviolet light source in a lower region of the zone to destroy such hazardous material.

Preferably the apparatus includes an ultraviolet light source to destroy particles of hazardous material retained in the pressurised air after it has passed over the package.

Preferably the apparatus includes means to maintain a negative pressure in the chamber.

In order that the invention may be well understood, it will now be described by way of example only with reference to the accompanied diagrammatic drawings in which –

Figure 1 is an elevation of a cabinet incorporating the unit of the invention;

Figure 2 is a vertical section through the cabinet, and

Figure 3 is a transverse section taken on lines III - III shown on Figure 2.

The apparatus comprises a tall cabinet 1 of rectangular cross-sectional shape. In one sidewall there is a sealable entry door 2. A glass window is present 3. Various control devices 4 are present on the outside of the cabinet.

As shown most clearly in Figure 2, the apparatus comprises an air cleaning and sensitising unit 10 in the bottom left half. To the right, there is a table 11 having a mesh 12 or similar surface adjacent the entry door 2. The unit 10 is of the type described in our patent application 0224897.9 (Our Ref: P03763GB). It consists of a prefilter, an ultraviolet lamp assembly and an outlet filter. The table 11 may be viewed via the window 3. Two arms 13 linked to rubber gloves 14 are accessible from outside the cabinet and extend into the chamber to reach to the table 11. A shelf 15 is present to house plastic bags, scissors and similar instruments. A set of ultraviolet lamps 16 is present below the table 11, near the floor.

In use pressurised air enters from the bottom of the cabinet and passes through the unit 10 to enter the chamber in the zone of the table 11. The air then passes over a package which has been placed on the table via the door 2. Using the gloves the operator manipulates the package and any external coating or powder is likely to be displaced. The powder will fall on to the ultra-violet light lamps 16 below the table 11, there to be destroyed. Powder which does not settle on the lamps is carried by the pressurised air back to the cleaning and sensitising unit 10 and in so doing, passes over the back of ultra-violet lamps. In this way all the released material will be destroyed.

If the operator considers that the package may have further hazards, he could place it in one of the sealable bags on the shelf 15 and so isolate it from the chamber. It can then be removed via the door.

The chamber has an outlet duct in its ceiling which leads via another filter to the atmosphere and level of air removed is adjusted to ensure that there is always a negative pressure within the chamber.

The hazardous material will be any poison capable of being applied to or located within a package, including an envelope, and which is capable of being harmed, ideally killed by ultraviolet light. Examples include bacteria and viruses; including anthrax, TB, MRSA superbug, staphylococcus aureus, Escherichia coli, streptococcus pneumoniae.

The ultraviolet germicidal irradiation is preferably at a wavelength of the order of 253.7 nanometres.

The filter media is preferably selected to remove more than say 99% of particles having a mean diameter of 0.3 micron in a single pass. The filter media may be electrostatic HEPA, CBC or the like or a combination of these. Preferably the air is passed in sequence through a unit having an electrostatic prefilter containing glass media; a bank of low pressure mercury halogen lamps behind quartz screens providing UV light; and then a HEPA filter which is irradiated by UV lamps.

The working surface is a table having perforations to allow the pressurised air to flow past. The table may have a flat surface or be of V section.

CLAIMS

1. A method of treating a package to release hazardous material which is associated with the package, the method comprising introducing pressurised air which is free of dust particles and micro-organisms into a zone of a chamber containing the package to be treated, contacting the air with the package, and releasing hazardous material therefrom.
2. A method according to Claim 1, wherein the air which has passed over the package is then passed over an ultraviolet light source to treat particles of hazardous material released into the pressurised air.
3. A method according to Claim 1 or 2, including the step of locating in a lower region of the zone an ultraviolet source and allowing or causing particles of the released hazardous material to fall thereon.
4. A method according to any preceding Claim, in which a negative pressure is maintained within the chamber.
5. A method according to any preceding Claim, including the step of providing a table in the zone to receive the package, the table being perforated so that the pressurised air can pass therethrough.
6. A method according to Claim 5, including the step of providing gloves in the zone and accessible from the outside by which an operator may manipulate a package on the perforated table to cause or allow release of hazardous material.

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7. A method according to Claim 5 or 6, including the step of providing a sealable container adjacent the table for the operator to place a suspect package therein and for separate processing.
8. Apparatus for treating a package to release and destroy hazardous material which is associated with the package, the apparatus comprising a chamber having a zone containing the package to be treated, means for supplying air which is pressurised and free of dust particles and micro-organisms to the zone to contact that air with a package in the zone, and an ultraviolet light source in a lower region of the zone to destroy such hazardous material.
9. Apparatus according to Claim 8, including an ultraviolet light source to destroy particles of hazardous material retained in the pressurised air after it has passed over the package.
10. Apparatus according to Claim 8 or 9, including means to maintain a negative pressure in the chamber.

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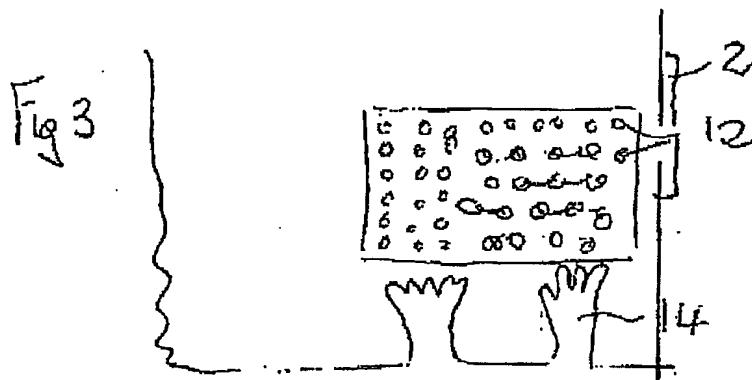
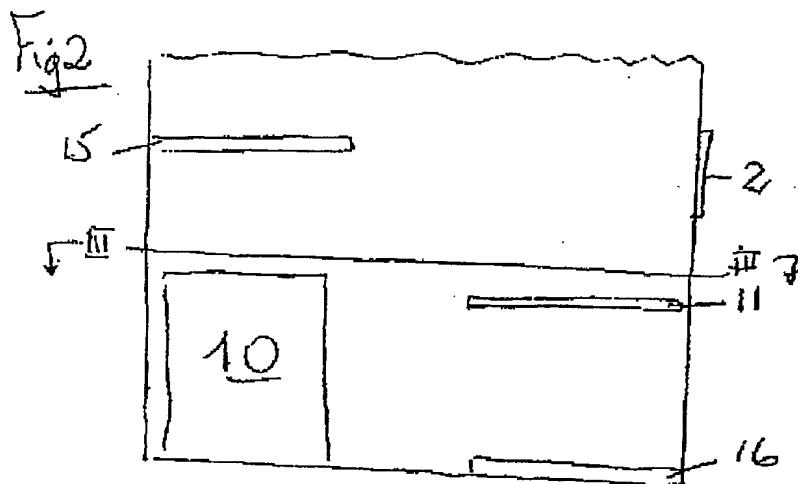
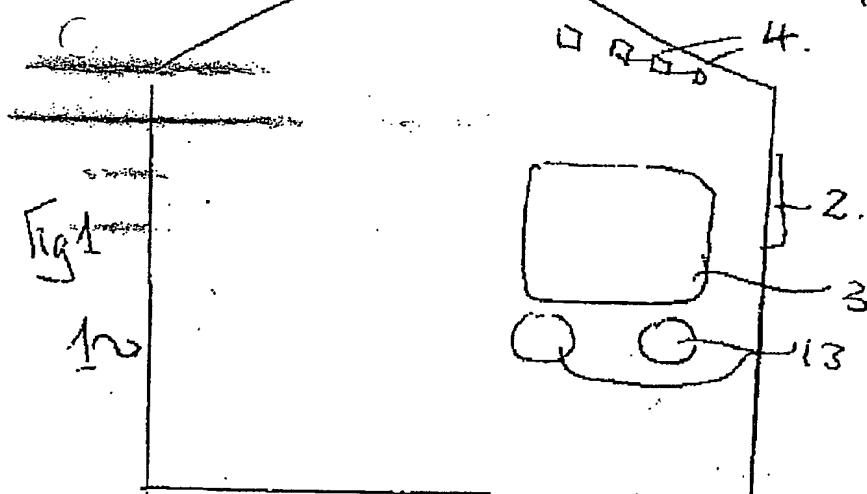
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11. *Agent brief*

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